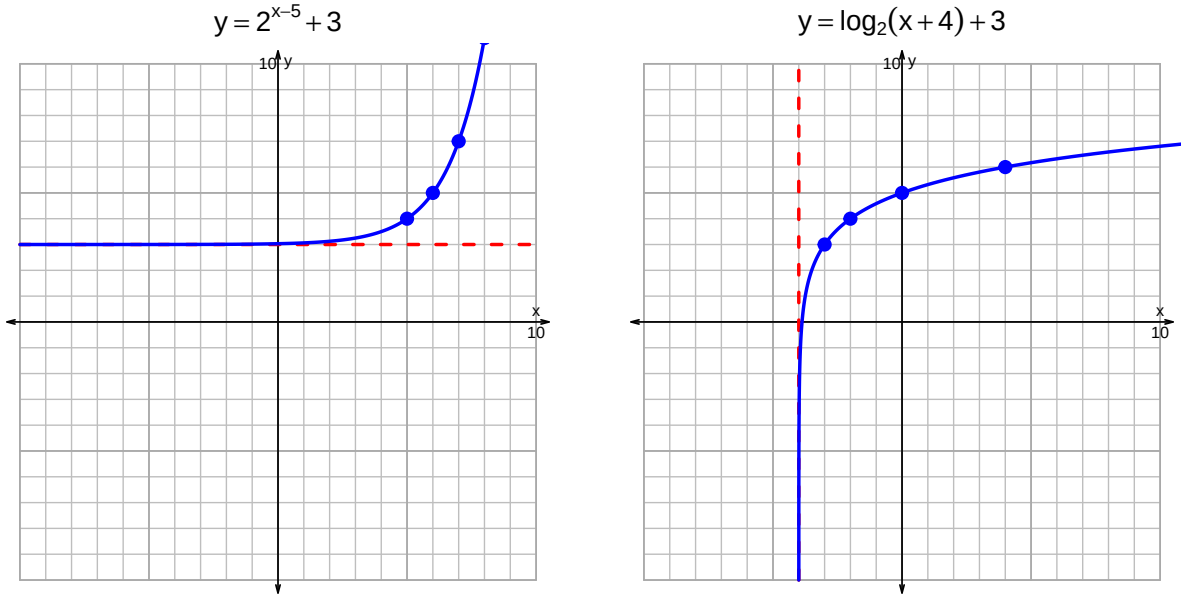
Name: Date:

S18QUIZ: EXP LOG (SLTN v214)

1. Graph $y = 2^{x-5} + 3$ and $y = \log_2(x+4) + 3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{4}{7}\right) \cdot 2^{-3t/5}$$

Divide both sides by $\frac{4}{7}$.

$$\frac{19 \cdot 7}{4} = 2^{-3t/5}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{19 \cdot 7}{4}\right) = \frac{-3t}{5}$$

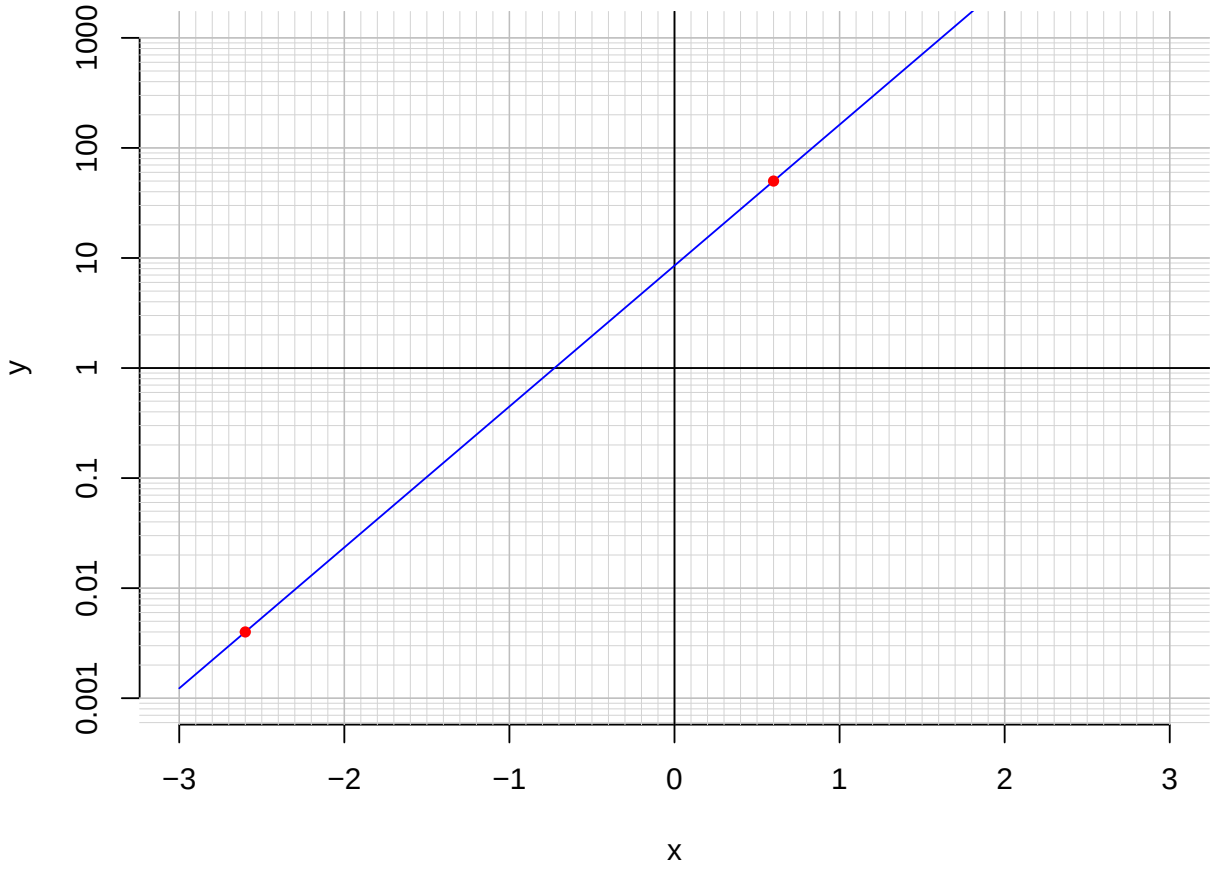
Divide both sides by $\frac{-3}{5}$.

$$\frac{-5}{3} \cdot \log_2\left(\frac{19 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{-5}{3} \cdot \log_2\left(\frac{19 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 8.53 \cdot e^{2.95x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(0.6)$.

$$f(0.6) = 50$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{2.95} \cdot \ln\left(\frac{x}{8.53}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.004)$.

$$f^{-1}(0.004) = -2.6$$